REMARKS

This Amendment is in response to the Office Action mailed on August 12, 2010. Claim 1 is amended and is supported, for example, in the specification page 5, lines 33-36; page 6, lines 2-3; and in Fig. 5A. No new matter is added. Claims 1-3 and 5-10 are pending.

Claim Objections:

Claims 1-10 are objected to for informalities. Claim 1 is amended and no longer contains the informalities identified in the objection. Withdrawal of the objection is requested.

§103 Rejections:

Claims 1-3, 5, 6, 8 and 10 are rejected as being unpatentable over Kim (US Patent No. 5, 987,904) in view of Lazar (US Patent No. 2,747,391) and further in view of Clark (US Patent No. 6,619,045). This rejection is traversed.

Claim 1 is directed to a cooling device that recites, among other features, that the rotation of the fan generates a discharged flow of cold air discharged from the cooler to the cooling chamber through the aperture and a sucked flow of cold air sucked from the cooling chamber to the cooler through the aperture. Also, claim 1 also recites that the discharged flow and the sucked flow directed from the cooling chamber to the cooler collide with each other in the aperture.

The combination of Kim, Lazar and Clark does not teach or suggest these features. The rejection asserts that the above features of claim 1 are inherent in Fig. 2 of Kim. This is not the case. Kim teaches a fan 20 disposed in an aperture formed in the partition C and a cylindrical component provided at the edge of the aperture (see Fig. A of the present Office Action and Fig. 2 of Kim). With this configuration, only a single direction airflow (i.e. a laminar flow) can be generated due to the rotation of the fan 20. Thus, the rejection is incorrect in stating that Kim inherently teaches that the rotation of the fan generates a discharged flow of cold air discharged from the cooler to the cooling chamber through the aperture and a sucked flow of cold air sucked from the cooling chamber to the cooler through the aperture. The rejection is also incorrect in stating that

Kim inherently teaches that the discharged flow and the sucked flow directed from the cooling chamber to the cooler collide with each other in the aperture.

Lazar does not overcome these deficiencies of Kim. Lazar teaches a single airflow generated by the fan 58, which causes air to be sucked from the open bottom of the casing 2 and discharged from the opening 66 (see column 2, lines 35-47 of Lazar). Nowhere does Lazar contemplate that a discharged flow and a sucked flow are directed in opposite directions to each other and are generated simultaneously so as to collide with each other in the opening 66 in order to generate a turbulence. Thus, Lazar fails to teach or suggest that the rotation of the fan generates a discharged flow of cold air discharged from the cooler to the cooling chamber through the aperture and a sucked flow of cold air sucked from the cooling chamber to the cooler through the aperture. Lazar also fails to teach or suggest that the discharged flow and the sucked flow directed from the cooling chamber to the cooler collide with each other in the aperture.

Clark also does not overcome these deficiencies of Kim and Lazar. Clark merely teaches a single direction airflow in which the fan 9 draws air from the container via the holes 5. As air is exhausted from the lower portion of the fan 9, the air passes over cold sink 10, into the cool air chamber 8 of the duct system and reenters the container interior 24 via the slot 4 (see column 3, lines 30-46 of Clark). Nowhere does Clark contemplate that a discharged flow and a sucked flow are directed in opposite directions to each other and are generated simultaneously so as to collide with each other in an opening in order to generate a turbulence. Thus, Clark fails to teach or suggest that the rotation of the fan generates a discharged flow of cold air discharged from the cooler to the cooling chamber through the aperture and a sucked flow of cold air sucked from the cooling chamber to the cooler through the aperture. Clark also fails to teach or suggest that the discharged flow and the sucked flow directed from the cooling chamber to the cooler collide with each other in the aperture.

Also, an advantage of these features of claim 1 is that a heat exchange is performed mainly as a result of the collision between the discharged flow and the sucked flow in the aperture. Accordingly, frost deposition on the cooler can be avoided, as little if any high humidity air passes through the cooler. Nowhere does Kim, Lazar or Clark contemplate a system that reduces frost deposition on a cooler. As the combination of

Kim, Lazar and Clark fails to contemplate a configuration in which a discharged flow and a sucked flow directed from a cooling chamber to a cooler collide with each other in an aperture and fails to contemplate the advantages achieved thereby, it would not be obvious to one skilled in the art to modify the refrigerator of Kim based on the teachings of Lazar and Clark in order to obtain these features of claim 1

For at least these reasons claim 1 is not suggested by the combination of Kim, Lazar and Clark and should be allowed. Claims 2, 3, 5, 6, 8 and 10 depend from claim 1 and should be allowed for at least the same reasons.

Claims 7 and 9 are rejected as being unpatentable over Kim in view of Lazar in view of Clark and further in view of Howe (US Patent No. 4,420,679). This rejection is traversed. Claims 7 and 9 depend from claim 1 and should be allowed for at least the same reasons. Applicants do not concede the correctness of this rejection.

Conclusion:

Applicants respectfully assert that the pending claims are in condition for allowance. If a telephone conference would be helpful in resolving any issues concerning this communication, please contact Applicants' primary attorney-of record, Douglas P. Mueller (Reg. No. 30,300), at (612) 455-3804.

Respectfully submitted,

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